4.2 AIR QUALITY

4.2.1 Impacts of the Proposed Master Plan

The relative significance of project-related air pollution was determined based on a comparison of predicted worst-case concentrations of carbon monoxide with levels allowed by established health-based air quality standards.

The weekday PM peak hour was used for the analysis because it reflects the highest volumes and greatest deterioration of level-of-service as compared to the No Action Alternative.

Construction

Dust from construction activities would contribute to ambient concentrations of suspended particulate matter. Construction contractor(s) would have to comply with the PSCAA regulations requiring all reasonable precautions be taken to minimize fugitive dust emissions.

Construction would require the use of heavy trucks and smaller equipment such as generators and compressors. Such engines can be significant sources of nitrogen oxides, PM2.5, and odorous gases. While it is unlikely the emissions from these sources would cause significant air quality impacts, there is a potential for diesel engine exhaust to cause impacts at off-site locations. There is growing awareness that the chemical constituents in diesel exhaust include a number of known and suspected human carcinogens, and many air pollution control agencies are beginning to take steps intended to minimize peoples' exposure to such air pollution.

Some phases of construction would cause odors detectable to some people in the area. This would be particularly true during paving operations using asphalt. The construction contractor(s) would have to comply with the PSCAA regulations when emitting odor-bearing air contaminates. Such odors from paving operations would be short-term. Because it is highly probable that the existing structures that are to be demolished contain asbestos, contractors would have to comply with PSCAA's Regulation III, Section 4.05 (b), which outlines best practices for the handling of asbestos.

Construction equipment and material hauling can affect traffic flow in a project area. Scheduling haul traffic during off-peak times (e.g., between 9 a.m. and 4 p.m.) would minimize effects on traffic and indirect increases in traffic-related emissions.

Operation

For projects that generate vehicular traffic, the air pollutant of major concern is carbon monoxide. Of the various vehicular emissions, CO is the pollutant emitted in the largest quantity for which ambient air standards exist. Therefore, CO is the primary focus of this analysis.

Traffic generated by the project would affect CO emissions in the Puget Sound CO maintenance area. The dispersion modeling conducted for this analysis provides a comparison of air quality conditions with and without the project in place. This analysis does not constitute a project-level conformity study as is required for projects with major transportation components, as the Proposed Master Plan does not include significant modifications to the road network and is therefore not subject to state and federal air quality conformity rules.

Analytical Method

Two standard computerized tools were used to evaluate potential air quality impacts from the proposed project in its buildout year 2012. First, peak-hour pollutant emission rates due to traffic in the project area were computed using the Mobile5b Mobile Source Emissions Model (EPA 1996). The Mobile5b input parameters were consistent with those used in the development of the Washington State Implementation Plan and Maintenance Plan for CO in the Puget Sound region, in accord with Washington Department of Ecology (Ecology) and Puget Sound Clean Air Agency (PSCAA) recommendations.

Vehicle emission factors from Mobile5b and worst-case meteorological conditions were input to the CAL3QHC dispersion model (EPA 1992a) to calculate ambient CO concentrations near the most-affected signalized intersection in the project area. The CAL3QHC model estimates CO concentrations at model receptors near roadway intersections. The estimates are based on emissions from both free-flowing and queued traffic under different wind and atmospheric stability conditions. Calculated CO concentrations were then compared with pertinent air quality standards.

Consistent with U.S. Environmental Protection Agency (EPA) guidance, the calculated 1-hour CO concentrations include a 3-ppm background level to account for emissions from other sources in the area. The modeled 1-hour concentrations were converted to represent 8-hour concentrations using a persistence factor of 0.7 to reflect both meteorological and traffic variability. EPA recommends using a 0.7 persistence factor in instances where there are no applicable monitoring data from which to derive a more area-specific conversion factor.

According to the EPA guidelines, quantitative analyses should be performed for projects when project-related traffic affects congested signalized intersections. Congested intersections, operating at level-of-service (LOS) "D" or worse, have the greatest potential to generate high CO levels.[1] The intersections of 1st Avenue South with Olson Place SW and West Marginal Way SW with Highland Park Way SW would be affected by project-related traffic and would operate at LOS D or worse during the weekday P.M. peak hour in the future with the proposed project. These intersections were examined with dispersion modeling. EPA guidance states that if no CO violations were to occur at these most-affected signalized intersections, then the proposed project would not result in significant air quality impacts due to traffic.

Due to increasingly stringent vehicle emission reduction requirements and a continuing vehicle Inspection and Maintenance program, Mobile5b estimates lower vehicle emission rates for the future analysis year than under existing conditions. For example, compared with 2002, the CO idle emission factors in 2012 are expected to be about 63 percent lower (see **Table 4.2-1**). Increases in traffic and congestion are not expected to offset these decreases in vehicle emission rates.

Air Quality Impacts

As shown in Table 4.2-1 below, off-site traffic-related air quality impacts for the Proposed Master Plan would be the same as the No Action Alternative. Traffic would not increase enough to increase idle emissions at the examined intersection. Modeling results with this alternative in 2012 are low

[1] Level of Service (LOS) represents the general progression of traffic through an intersection based on the weighted average per vehicle delay. LOS varies from "A" (good progress with little delay) to "F" (very poor progress with extensive delay).

enough to ensure compliance with the NAAQS (see Table 4.2-1). These results indicate that project generated traffic would not adversely impact air quality at the study intersection.

Table 4.2-1
CALCULATED MAXIMUM PEAK 1- AND 8-HOUR CO CONCENTRATIONS (PPM)

Intersection	Interval	2002 Existing	2012		
			No Action Alternative	Proposed Master Plan	Design Alternative Master Plan
Olson Pl. SW and 1st Ave. So.	1-hour	6.5	5.3	5.3	5.3
	8-hour	4.6	3.7	3.7	3.7
W. Marg. Way SW and Highland Pk. Way SW	1-hour	5.7	4.8	4.8	4.8
	8-hour	4.5	3.4	3.4	3.4

Note: The 1-hour NAAQS is 35 ppm; the 8-hour standard is 9 ppm.
Source: MFG, 2003.

Non-residential uses and parking would be located between 8th Avenue SW and 7th Avenue SW, near the center of the project site. Cars slowing down to park in this area may idle. This could lead to short-term increases in air pollution, but the overall impact is expected to be minimal.

No significant additional sources of air pollution (e.g., library, retail, social service uses, etc.), are anticipated as a result of the project.

Cumulative Impacts

The transportation modeling considered both traffic related to the proposed project and to other planned growth in the area. The air quality analysis of traffic sources based on these data, therefore, is an assessment of projected cumulative impacts.

4.2.2 Impacts of the Alternatives

Design Alternative Master Plan

The Design Alternative Master Plan would generate slightly lower numbers of PM peak-hour trips than with the Proposed Master Plan; refer to *Section 4.15, Transportation,* of this Draft EIS. Although this would tend to decrease vehicular traffic in the immediate project area somewhat, the effect on the most-affected intersections studied for this analysis would not be significant.

Air quality modeling results for 2012 are identical for the No Action Alternative and the Design Alternative Master Plan and would remain below the 1-hour NAAQS at both examined intersections. These results indicate air quality at project-affected intersections would not be adversely affected by project generated traffic.

No Action Alternative

With the No Action Alternative, redevelopment would not occur and project-related traffic increases would not occur. By 2012, the calculated worst-case 1-hour CO concentrations at the examined intersections would be below the 35-ppm standard, and converting the 1-hour concentration to an 8-hour average results in compliance with the 9-ppm standard (Table 4.2-1).

4.2.3 Mitigation Measures

The following is a list of possible mitigation measures that could be implemented to reduce potential impacts during construction.

- Use equipment and trucks that are maintained in good operational condition
- Require off road equipment to be retrofit with emission reduction equipment (i.e., require participation in Puget Sound region Diesel Solutions by project sponsors and contractors)
- Implement restrictions on construction truck idling (e.g., limit idling to a maximum of 5 minutes)
- Locate construction equipment away from sensitive receptors such as fresh air intakes to buildings, air conditioners, and sensitive populations
- Locate construction staging zones where diesel emissions won't be noticeable to the public or near sensitive populations such as the elderly and the young
- Spray exposed soil with water or other suppressant to reduce emissions of M10 and deposition of particulate matter
- Pave or use gravel on staging areas and roads that would be exposed for long periods
- Cover trucks transporting materials, wetting materials in trucks, or providing adequate freeboard (space from the top of the material to the top of the truck bed), to reduce PM10 emissions and deposition during transport
- Provide wheel washers to remove particulate matter that would otherwise be carried off-site by vehicles to decrease deposition of particulate matter on area roadways
- Remove particulate matter deposited on paved, public roads, sidewalks, and bicycle and pedestrian paths to reduce mud and dust; sweep and wash streets continuously to reduce emissions
- Cover dirt, gravel, and debris piles as needed to reduce dust and wind-blown debris

CO concentrations near the worst-case signalized intersections would comply with applicable CO standards. Therefore, operational mitigation measures would not be necessary and are not proposed. Wood stoves are a major contributor to particulate matter emissions in residential areas. If new construction of units should include the installation of fireplaces, natural gas units should be required instead of wood-burning appliances, to ensure reduced emissions.

4.2.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts on air quality are anticipated.